seem to us to be exaggerated, and the present moment is a particularly unfortunate one for such a departure.) With this broad historical treatment is happily combined an essentially modern outlook when dealing with the details of the subject. The new lines of advance opened up by the development of physical chemistry receive their full meed of recognition, and short chapters are devoted to explaining the principles on which these methods of investigation are based. Some of these chapters are less satisfactory than others. That on voltaic cells, for example, comprising eleven pages, deals with a great range of topics in what is necessarily a compressed and scrappy fashion, and will not convey much to a reader new to the subject.

The descriptive portions of the book have been critically compiled, though we think that more scepticism might have been displayed in assigning definite formulæ to such classes of compounds as basic salts, hydrated oxides, etc. Much recent work is included, and the same applies to the sections dealing with technical processes, where it is pleasant to find an up-to-date treatment of such subjects as sulphuric acid concentration and the Deacon process, and a mention of electrostatic precipitation, flotation processes, and electromagnetic separation. The relative importance of a process is not, however, always reflected by the amount of space it occupies in the text. Blast-furnace copper smelting is less adequately treated than the Welsh process, and electrolytic alkali processes are represented by one obsolete and one obsolescent cell.

Mistakes appear to be very few. Attention may, however, be directed to the fact that in practice calcium cyanamide is not produced in an arc furnace (p. 544); also that Alfred, not Alphonse, Werner was the author of the co-ordination theory of valency (p. 1011).

The only criticism of the book, as a whole, that we are inclined to make is that the author has perhaps been too loath to omit details of minor importance, or, as already indicated, subjects the adequate treatment of which would demand considerably larger space. The volume is large in size, and the price correspondingly high. It contains more material than is required for the average Pass degree, but not enough for the average Honours degree; and these circumstances may adversely affect the use made of it by university students, for whom it is professedly designed. But the book is so good that one must hope that this will not be the case.

It remains to congratulate the publishers on their share of the work.

A. J. A.

Our Bookshelf.

The Subject Index to Periodicals. 1917–19. *B–E. Historical, Political, and Economic Sciences.* 496 cols. (pp. 248). (London: The Library Association, 1921.) *1l. 1s.* net.

THIS section of the "Subject Index to Periodicals," indexing papers on historical, political, and economic sciences, contains above 12,000 entries taken from more than 400 English and foreign periodicals published during the years 1917–19. Though it is not a catalogue of science, the economic problems affecting the development of industrial science are indexed. Folk-lore is no longer included in this list, but has been transferred to List A: Theology and Philosophy. Headings relating to Prehistoric Man and to local Topography are to be included in List G: Fine Art and Archæology. Among the subjects indexed in the present list are "Commercial Aeronautics," "Agriculture," "Chemicals: Manufacture and Industry," "Coal Trade," "Industrial Efficiency," "Electric Industries," "Ethnology," "European War," "Factories," "Fisheries," "Forestry," "Food Supply," "Iron Industry," "Labour," "League of Nations," "Military Art and Science," "Railways," and "Sociology."

Those who are interested in problems connected with the changed economic conditions brought about by the war will find in this list the titles of most of the papers that have been published on these subjects during the three years indexed. The catalogue will also have an historical interest as showing what we were all thinking about during the second half of the war period.

Year-Book of the Scientific and Learned Societies of Great Britain and Ireland. Thirty-seventh Annual Issue. Pp. vi + 354. (London: Charles Griffin and Co., Ltd., 1920.) *15s.*

WE welcome the thirty-seventh edition of this useful annual, which is invaluable as a guide to the many scientific societies, of local as well as of more general interest, in the United Kingdom. In it will be found a record of the work done in science, literature, and art during the academic year 1919–20, and it is gratifying to note that the small increase in price is balanced by an increase in size of nearly twenty pages, which testifies amply to the further activities of our men of science. The volume is divided into a number of sections dealing respectively with science generally; astronomy; mathematics and physics; chemistry; geography and geology; biology; economics; mechanical sciences; naval and military science; agriculture; law; literature and history; psychology; archæology; and medicine. A noteworthy feature is the inclusion of particulars from scientific institutions and departments connected with Government service. Among these are the Meteorological Office, the National Physical Laboratory, the Geological Survey, the Natural History Museum, the Ministry of Health, the Medical Research Council, the Royal Observa-

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tory, and the Imperial Institute. That the work is up to date is shown by the inclusion of the Institute of Physics, which was incorporated during the past year. We have so far noted one omission only—the Imperial Mineral Resources Bureau.

The World of Sound: Six Lectures delivered before a Juvenile Auditory at the Royal Institution, Christmas, 1919. By Sir William Bragg. Pp. viii + 196. (London: G. Bell and Sons, Ltd., 1920.) 6*s.* net.

THOUGH the original purpose of these lectures was to arouse the interest of juveniles in the phenomena of sound and their applications, they must have appealed with equal force to those adults who were so fortunate as to hear them. Here the lectures are put into book form, with necessary diagrams and additional dainty illustrations which add much to the attractiveness of the text. Even to the student who is conversant with the ordinary text-books, much of the information must be new; this is particularly the case in the lecture on "Sounds of the Country," in which are described the methods by which sound-waves are generated by insects and by the passage of wind through the foliage of trees. In the following lecture on "Sounds of the Sea" the most attractive subject is the gradual development of the human ear from the simple rudimentary ear of the fish. The interest of the subject culminates in the last lecture on "Sounds in War," where Sir William Bragg's first-hand knowledge is applied to the description, in the simplest language, of the ingenious devices used in locating submarines, enemy guns on land by "sound-ranging," and the direction of enemy mining operations by the geophone.

The Wild Unmasked. By F. St. Mars. Pp. 376. (London and Edinburgh: W. and R. Chambers, Ltd., 1920.) 6*s.* net.

THE author has a gift of picturesque vision and delineation. There is no mistaking a strong imaginative power. We see this in the very first sketch of the interior of a wasp's nest and in the life-history of an intrusive parasitic beetle. The day's work of a sparrow-hawk, a water-vole's flitting, a fight between a big rat and a stoat, the adventures of an otter, a fight between a wild cat and a fox—such are some of the subjects of this romantic book. Prominence is given to the competitive side of the struggle for existence, which is one side of the truth, and many pages, like some in Nature's book, are lurid. We are not prepared to accept everything Mr. St. Mars infers, such as the shrew's death from a sudden noise, but the whole book expresses personal observation. What is first-class in the book is its vividness—it is not a study in still life, but in strenuous, palpitating endeavour. What is dubious is the extent to which the author pushes his anthropomorphism. With big-brained animals it seems a legitimate hypothesis, but in regard to sea-anemones it palls. What is more than dubious, in our judgment, is the occasional use of phraseology like "Mr. Passer," "Mrs. Hare," and pet names for wild animals. They strike a false note. The book would have been finer if it had been less facetious.

An Introduction to the Structure and Reproduction of Plants. By Prof. F. E. Fritch and Dr. E. J. Salisbury. Pp. viii + 458 + 2 plates. (London: G. Bell and Sons, Ltd., 1920.) 15*s.* net.

THE two parts of this work deal respectively with the anatomy and the life-histories and reproduction of plants. A large number of the anatomical figures are original, and although they vary in quality, many of them are excellent for their purpose. A few, however, show evidence of hasty sketching. As a reference book for first-year university students, it is the most useful we have seen. Although its treatment is fuller in many respects than an average first-year student can compass, yet this is perhaps an error in the right direction. Of special interest may be mentioned the chapters on cell contents, secretory organs, and anatomy in relation to habitat, as well as the final chapter on heredity and evolution. The book will form a very useful addition to the introductory text-books on structural botany.

Annuaire pour l'An 1921, *publié par le Bureau des Longitudes.* Pp. viii + 710 + A 42 + B 17 + C 69. (Paris: Gauthier-Villars et Cie, n.d.) 8 francs net.

THIS widely used handbook contains all the old well-known features, and in addition some new ones. The astronomical, physical, and political tables are very full; there are useful maps of the magnetic declination, inclination, and horizontal force in France in 1911, also full instructions for constructing sundials, and a set of star maps, with directions for their use. M. G. Bigourdan contributes a useful and lucid article on the proper motions and radial velocities of the stars, addressed to readers who have little previous knowledge of the subject. Gen. Bourgeois contributes a biographical notice of Gen. Bassot (1841–1916), whose name is well known among workers on geodesy. The civil day (commencing at midnight) is used throughout this handbook; this system will become universal at the beginning of 1925.

Lectures on the Principle of Symmetry and its Applications in all Natural Sciences. By Prof. F. M. Jaeger. Second (augmented) edition. Pp. xii + 348. (Amsterdam: Publishing Company "Elsevier," 1920.)

THAT a second edition of this inspiring treatise on crystallography has been issued so soon—the first edition was reviewed in NATURE for June 6, 1918—is sufficient guarantee of its worth. Substantially, the volume is the same as the earlier edition, but the author has taken the opportunity to correct a number of minor errors and to make a few additions which the passage of time has shown to be desirable.

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